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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,328	06/04/2001	Kazuyuki Miya	L9289.01146	4758

7590 02/22/2005

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EXAMINER

UBILES, MARIE C

ART UNIT	PAPER NUMBER
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2642

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/857,328		MIYA, KAZUYUKI	
	Examiner		Art Unit	
	Marie C. Ubiles		2642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/28/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on October 28, 2004 has been entered. Claims 1-7 have been cancelled. Claims 8-14 have been added. Claims 8-14 are still pending in this application, with claims 8 and 12 being independent.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (US 6694155) in view of Karlsson et al. (US 6470192).

Chin et al. discloses a radio base apparatus comprising a diversity antenna (or antenna array)(See Abstract, lines 1-3); a transmitter (See Fig. 2, "to transmitters") wherein the transmitter comprises a calculator (or *D/L Beamforming Weight Generator*) that calculates a reception transmission weight (as read on "downlink beamforming") determined based on an uplink signal (See Col. 5, lines 61-67 and Col. 6, lines 1-5); a multiplier (See Fig. 2) that multiplies only a transmission signal for a channel to a specific user by the transmission weight (as observed from Fig. 2, the "D/L beamforming weight" is calculated from a "U/L Channel Covariance Matrix Estimator", the calculations are eventually send to multiplier to be processed as per "channel-per user" basis, as may appreciated from Fig. 2)(Further, see Col. 8, lines 56-60).

Chin's system may be defined as an "adaptive array antenna" as it is an antenna of a dynamic nature –the antenna changes the transmission weight based on estimated uplink information.

Regarding claimed limitation "a transmit power controller that controls a transmit power of the transmission signal multiplied by the transmission in accordance with a transmit power control signal". Chin et al. teaches that downlink beamforming weights can be generated using different approaches, two of them being *iterative virtual power weighted* and *virtual power weighted*; in this manner Chin's introduces a element of power into the beamforming weight generation (See Col. 4, lines 18-25). Thus, it would have obvious to one of ordinary skill that Chin's system may need a "transmit power controller" as an element of transmit power (or virtual power weighted) is necessary in the determination of transmission weight (or D/L beamforming weight). Further, a beamforming pattern does not take in consideration only the direction to which a signal is to be transmitted, but the power strength necessary to form the beam pattern.

It can be seen that Chin's et al. system lacks the limitation of the base station comprising "two diversity antennas, each comprised of a plurality of antenna elements, spaced apart from each other by a distance enabling space diversity".

Karlsson et al. teaches "...in FIG. 4, two antenna arrays 400 and 402 are used to achieve diversity for mitigating the effects of radio signal fading.[...] if the beamforming devices associated with the first and second arrays 400 and 402 are designed to form beams such that one beam from one of the beamforming devices always cover an area

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next to areas covered by beams from the other beamforming device..." (See Description, Col. 5, lines 6-9 and 17-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chin's et al system by adding two antenna arrays (or diversity antennas) as taught by Karlsson et al., and thus in this manner provide the base station with means to reduce radio signal fading.

Claim 12 is a method related to that of the apparatus of claim 8, and therefore is rejected for the same claim 8.

4. Claims 9-11 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (US 6694155) in view of Karlsson et al. (US 6470192) as applied to claims 8 and 12 above, and further in view of Nishimori et al. (US 6,375,182).

Regarding the limitations concerning "a spreader that spread the transmission signal using a predetermined spreading code" and "a spreader that spreads the transmission signal after the transmit diversity calculation...", may be read on the teachings of Chin et al. regarding a plurality of mobile users sharing the same channels which can be a set of spreading codes for CDMA (See Col. 5, lines 45-50).

As for the remaining claimed limitations, Nishimori et al. teaches "Finally, the weight multiplier circuit 2-11 multiplies the calibration value thus obtained and the amplitude/phase value of the receive signal, and the transmission is carried out by using the product of said multiplication. Thus, the calibration among the branches of

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an array antenna is carried out in a transmitter/receiver itself..." (See Description, Col. 10, lines 39-44).

It would have been obvious to one of ordinary skill in the art to modify Chin et al. and Karlsson et al. combination in order to provide a system that will provide no degradation of transmission efficiency.

Response to Arguments

5. Applicant's arguments filed October 28, 2004 have been fully considered but they are not persuasive.

Applicant argues in page 8 that Karlsson and the claimed invention are different in configuration. Examiner respectfully notes that while Karlsson's system may be used in the uplink reception system, Karlsson's system is analogous art and his teachings regarding the use of "two antenna arrays" are valid for the obviousness combination.

The argument regarding Karlsson not disclosing "transmission signals of channels to a specific user" is irrelevant to the combination for the same reasons expressed in the paragraph above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

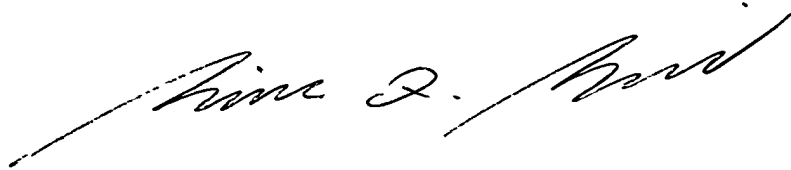
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marie C. Ubiles whose telephone number is (703) 305-0684. The examiner can normally be reached on 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ahmad Matar can be reached on (703) 305-4731. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Marie C. Ubiles
January 12, 2004.

A handwritten signature in black ink, appearing to read "Bing Q. Bui". The signature is fluid and cursive, with a long horizontal stroke at the beginning and a sharp upward stroke at the end.

BING Q. BUI
PRIMARY EXAMINER